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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,727	02/11/2004	Su-Hyung Kim	5000-1-521	2806

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EXAMINER	
CHRISS, ANDREW W	
ART UNIT	PAPER NUMBER
2619	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/776,727	KIM ET AL.	
	Examiner	Art Unit	
	Andrew Chriss	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment, filed February 28, 2008, has been entered and carefully considered. Claims 1 and 7-9 are amended, and Claims 1-9 are currently pending.

2. Applicant's amendment to the abstract has been entered.

3. In light of Applicant's amendment to independent Claim 1, rejection of Claims 1-9 under 35 U.S.C. 103(a) is withdrawn.

4. In light of Applicant's amendment to Claims 8 and 9, objection to said claims is withdrawn.

5. In light of Applicant's amendment to Claim 9, rejection of said claim under 35 U.S.C. 112, second paragraph, is withdrawn.

Specification

6. The abstract of the disclosure is objected to because the first sentence is a sentence fragment. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. **Claims 1 and 3-7** rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (AAPA) in view of McAlpine (United States Patent Application Publication US 2002/0141427 A1) and Bray (United States Patent 5,487,061).

Regarding Claim 1, AAPA teaches a method for upstream traffic control in association with a plurality of buffers including at least a first, a second, and a third buffer in a conventional Ethernet-based passive optical network (Figure 3, page 6 of Applicant's specification). AAPA further teaches determining if there is a data frame to transfer in a first buffer (page 6, lines 18-24). However, AAPA may not teach a plurality of buffers with a predetermined transfer priority based upon a service characteristic or claimed method steps b) through e). In the same field of endeavor, McAlpine teaches a switch element with multiple output queues (Figure 8), each assigned a class and a set of watermarks (paragraph 0036). McAlpine further teaches a method of flow control wherein the head packet for each class queue compared with predetermined watermarks, such as the low watermark. After performing an optimization calculation, an arbiter device may select for transmission the class queue that receives the highest value and transmit the packets in the queue (paragraph 0047). As such, the optimization calculation taught in McAlpine discloses a method of examining data frames in multiple buffers against a low water mark, transferring a data frame if it is determined that the data frame in a buffer if it does not exceed a low water mark, and transferring data frames from multiple buffers if it is determined that the data frames do not exceed low water marks. McAlpine further teaches utilizing round-robin arbitration to resolve ties for highest priority (paragraph 0068). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric. However, the aforementioned references may not disclose a FIFO scheduler performing FIFO scheduling for a plurality of buffers while utilizing a

HPFA algorithm in a round robin system. In the same field of endeavor, Bray discloses a weighted round-robin readout scheme for a plurality of FIFO buffers (Figure 3), wherein a data frame in the buffer with the highest calculated priority is transmitted priority to data frames in buffers with lower priorities (Figures 3, 4, and 11; column 11, lines 4-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the weighted round-robin disclosed in Bray with the EPON upstream traffic control taught in AAPA, as modified above, in order to support relative priorities between different applications (e.g., assigning a higher priority to a user sending real-time video).

Regarding Claim 3, McAlpine further teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element (paragraph 0047). Thus, all of the data frames in a buffer may be transferred if the data frame stored in the first buffer exceeds a low water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA, as modified above, in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 4, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element (paragraph 0047). Thus, a data frame in a second buffer would be transmitted if the data frame exceeds a low water mark, while a data frame in a first buffer did

not exceed a water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA, as modified above, in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 5, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element. The optimization calculation is performed for each of the classes in order to determine which packets to send next (paragraph 0047). Thus, data frames in a first and second buffer may be transferred if it is determined that a data frame in a first buffer exceeds a low water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA, as modified above, in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 6, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element (paragraph 0047). Thus, a data frame in a third buffer would be transferred if it is determined that a data frame in a first buffer does not exceed a low water mark and a data frame in a third buffer does exceed a low water mark. It would have been obvious to

one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA, as modified above, in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 7, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element. The optimization calculation is performed for each of the classes in order to determine which packets to send next (paragraph 0047). Thus, all data frames stored in a first buffer would be transferred, followed by the transfer of data frames in another buffer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA, as modified above, in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

9. **Claim 2** rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of McAlpine and Bray, as applied to claim 1 above, and further in view of King et al (United States Patent 6,314,106), hereinafter King. AAPA, McAlpine, and Bray teach all of the limitations of Claim 1, as described above. McAlpine further teaches an optimization algorithm, as described with regards to Claim 1 above, thus determining the status of a data frame to transfer in a queue. However, the references may not teach checking a data frame size referring to the low water mark and determining whether the transfer of data is to be effected. In the same field of endeavor, McAlpine teaches a receive port initiating a watermark check by checking the size of

the received packet (column 6, lines 10-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the packet size determination with the upstream data control taught in AAPA, as modified above, in order to efficiently use receive side processing resources and minimize transmit side congestion.

10. **Claim 8** rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of McAlpine and Bray, as applied to claim 1 above, and further in view of Feig et al (United States Patent Application Publication US 2002/0085713 A1), hereinafter Feig. AAPA, McAlpine, and Bray teach all of the limitations of Claim 1, as described above. However, the references may not teach buffers that store video, audio, or text data frames. In the same field of endeavor, Feig teaches a buffer that stores multimedia files, such as video, audio, and text (paragraph 0029). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multimedia buffer taught in Feig with the upstream data control taught in AAPA, as modified above, in order to deliver a media file to a cache local to a user, but not accessible until the deliverer or copyright owner authorizes access to or playback of the media file.

11. **Claim 9** rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of McAlpine and Bray, as applied to claim 1 above, and further in view of Osborne (United States Patent 6,032,179). AAPA, McAlpine, and Bray teach all of the limitations of Claim 1, as described above. However, the references may not teach generating an interrupt based on comparison of a data frame in a buffer to a low water mark. In the same field of endeavor, Osborne teaches generating interrupts based on watermark levels in a queue (column 8, lines 22-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the transfer interrupt taught in Osborne with the upstream data control taught in

AAPA, as modified above, in order to allow virtual circuits to decide which queue should be used for selecting buffers.

Response to Arguments

12. Applicant's arguments with respect to rejection of Claims 1-9 under 35 U.S.C. 103(a) have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Chriss whose telephone number is (571)272-1774. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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